

**Amendments to the Claims:**

Following is a complete listing of the claims pending in the application, as amended, which replaces all prior versions and listings of claims in the application:

1-71. (Canceled.)

72. (Previously Presented) A method in a computer for providing information about a state that is modeled with multiple state attributes, comprising:

monitoring activities of a module related to at least one of the state attributes; and  
without other input from the module or from a user,

automatically determining an event whose occurrence is of interest to the module,  
the determining based on the monitored module activities;

automatically monitoring information related to state attributes for an indication  
of an occurrence of the event; and

when the monitoring detects an indication of the occurrence of the event,  
automatically notifying the module of the occurrence.

73. (Original) The method of claim 72 wherein the monitored activities of the module include supplying of values of state attributes to others or receiving of values of state attributes from others, and wherein the determined event is related to availability of a value of at least one state attribute.

74. (Original) The method of claim 72 wherein the event is availability of a source for supplying values of a first state attribute.

75. (Original) The method of claim 72 wherein the state attributes represent information about a user of the computer.

76-81. (Canceled.)

82. (Original) A method in a wearable computer for providing information about a current state of a user of the wearable computer, the current state modeled with multiple state attributes, the wearable computer executing a plurality of state server modules to supply values for the state attributes, executing a plurality of state client modules to receive and process values for the state attributes, and executing an intermediary module to facilitate exchange of state attribute values, the method comprising:

- under control of each of the executing state server modules, sending to the intermediary module values for at least one of the state attributes;

- under control of multiple of the executing state client modules, sending to the intermediary module requests for values for at least one of the state attributes; and

- under control of the intermediary module,

- receiving the sent state attribute values and the sent state attribute value requests;

- in response to the received state attribute value requests, sending at least some of the received state attribute values to at least some of the state client modules;

- analyzing the received state attribute value requests in order to determine events related to the received state attribute value requests such that occurrences of the determined events may be of interest to at least some of the state client modules; and

- without other intervention from the state client modules,

- determining to monitor for occurrences of the determined events; and

- when the monitoring detects an occurrence of one of the determined events, notifying at least one of the state client modules of the detected occurrence, so that state client modules can automatically be notified of occurrences of events of interest.

83. (Original) The method of claim 82 wherein the analyzing of the received state attribute value requests from one of the state client modules indicates an interest in receiving values from a specified state server module, and wherein the determined event is related to the specified state server module becoming available or unavailable to supply state attribute values.

84. (Original) The method of claim 82 wherein the analyzing of the received state attribute value requests from one of the state client modules indicates an interest in receiving values from a specified state attribute, and wherein the determined event is related to a state server module becoming available or unavailable to supply values for the specified state attribute.

85. (Original) The method of claim 82 including, under the control of the intermediary module:

receiving a notification request for a specified type of event from one of the modules such that the module will be notified when the specified type of event occurs;

in response to the receiving of the notification request from the module, monitoring occurrences of events in order to detect an occurrence of the type of event specified for that notification request; and

when an occurrence is detected of the type of event specified by the notification request from the module, notifying the module of the occurrence.

86. (Original) The method of claim 82 wherein the determining of at least some of the events includes determining a number of times that the notifying of detected occurrences of that determined event is to occur.

87. (Original) The method of claim 82 wherein the determining of at least some of the events includes determining times during which the notifying of detected occurrences of that determined event is to occur.

88. (Original) The method of claim 82 wherein the monitoring for occurrences of the determined events includes analyzing received state attribute values or received messages.

89. (Original) The method of claim 82 including, under the control of the intermediary module:

receiving from a first of the state client modules an indication of a condition related to values of one or more specified state attributes, the indicated condition such that the first state client module desires to know when the condition has been satisfied;

determining whether any received values for the specified state attributes satisfy the condition; and

when it is determined that the condition is satisfied, notifying the first state client module.

90. (Original) The method of claim 82 including, under the control of a first of the state client modules:

receiving a sent current value from the intermediary module; and

presenting information to a user of the first state client module based on the receiving of the value.

91. (Original) The method of claim 82 wherein the analyzing of the received state attribute value requests includes detecting patterns in the requests.

92. (Original) The method of claim 82 including analyzing responses of the state client modules to situations in order to determine events whose occurrences may be of interest to at least some of the state client modules.

93. (Original) The method of claim 82 including monitoring activities of the state client modules in order to determine events whose occurrences may be of interest to at least some of the state client modules.

94. (Original) The method of claim 82 including analyzing received messages from the state client modules in order to determine events whose occurrences may be of interest to at least some of the state client modules.

95. (Original) The method of claim 82 including analyzing the received state attribute values in order to determine events whose occurrences may be of interest to at least some of the state client modules or the state server modules.

96. (Original) The method of claim 82 wherein the determining of events that may be of interest is performed for each of multiple of the state client modules by analyzing state attribute value requests that are received from that state client module, and wherein the notifying of the state client modules of a detected occurrence of one of the determined events includes notifying the state client module whose state attribute value requests were used to determine that one event.

97. (Previously Presented) A method in a computer for providing information about a current state that is modeled with multiple state attributes, the method comprising:

automatically analyzing received information related to at least one of the multiple state attributes in order to automatically determine at least one type of occurrence that may be of interest to at least one determined module;

after the determining of the type of occurrence, detecting an occurrence of the determined type; and

notifying the determined modules of the detected occurrence.

98. (Original) The method of claim 97 wherein the detecting of the occurrence includes monitoring received information.

99. (Original) The method of claim 97 wherein the detecting of the occurrence includes detecting changes in the modeling of the current state.

100. (Original) The method of claim 97 wherein the determined type of occurrence is satisfaction of a condition related to a value of at least one of the state attributes, and wherein the detecting of the occurrence includes analyzing changes in the values of the at least one state attributes in order to determine when the condition is satisfied.

101. (Original) The method of claim 97 wherein at least one of the determined modules is a source of values for at least one of the state attributes.

102. (Original) The method of claim 97 wherein the at least one of the determined modules is a consumer of values for at least one of the state attributes.

103. (Original) The method of claim 97 wherein the determined type of occurrence is a change in a value of a determined state attribute.

104. (Original) The method of claim 97 wherein the determined type of occurrence includes a source becoming available to supply values for a determined state attribute.

105. (Original) The method of claim 97 wherein the determined type of occurrence includes availability of a value of a determined state attribute that satisfies a determined criteria.

106. (Original) The method of claim 97 wherein the determined type of occurrence includes a determined source becoming available to supply state attribute values, and wherein the detecting includes determining that the determined source is currently able to supply state attribute values.

107. (Original) The method of claim 97 wherein the determined type of occurrence includes a determined client becoming available to receive state attribute values.

108. (Original) The method of claim 97 wherein the determined type of occurrence includes at least one client expressing an interest in receiving values of a determined state attribute.

109. (Original) The method of claim 97 wherein the computer has access to various devices, and wherein the determined type of occurrence includes a value of one of the state attributes indicating that access to a determined device has become available.

110. (Original) The method of claim 97 wherein the determined type of occurrence includes access to a determined group of themed attributes becoming available.

111. (Original) The method of claim 97 wherein the providing of the information about the current state is performed by a characterization module, and wherein the determined type of occurrence includes a value of one of the state attributes indicating that access to determined other functionality provided by the characterization module has become available.

112. (Original) The method of claim 111 wherein the other functionality is a determined mediator.

113. (Original) The method of claim 97 wherein the determining of the type of occurrence includes determining a number of times that the notifying of the determined modules is to occur.

114. (Original) The method of claim 97 wherein the determining of the type of occurrence includes determining times during which the notifying of the determined modules is to occur.

115. (Original) The method of claim 97 wherein the state attributes represent information about a user of the computer.

116. (Original) The method of claim 115 wherein the represented information reflects a modeled mental state of the user.

117. (Original) The method of claim 97 wherein the state attributes represent information about the computer.

118. (Original) The method of claim 97 wherein the state attributes represent information about a physical environment.

119. (Original) The method of claim 97 wherein the state attributes represent information about a cyber-environment of a user of the computer.

120. (Original) The method of claim 97 wherein the state attributes represent current predictions about a future state.

121. (Original) The method of claim 97 wherein the notifying of a module of a detected occurrence prompts the module to present information to a user of the module.

122. (Original) The method of claim 97 wherein the notifying of a module of a detected occurrence includes supplying information about the detected occurrence.

123. (Original) The method of claim 97 wherein the determining of the type of occurrence includes determining an event whose occurrences are occurrences of the determined type.

124. (Currently Amended) A computer-readable medium whose contents cause a computing device to provide information about a current state that is represented with multiple attributes, by performing a method comprising:

automatically analyzing received information related to at least one of the multiple attributes in order to determine at least one type of occurrence that may be of interest to at least one module, the determining of the at least one type of occurrence that may be of interest being performed automatically without having received any prior indications that those types of occurrences are of interest;

after the determining of the type of occurrence, detecting an occurrence of the determined type; and

notifying the modules of the detected occurrence.

125. (Original) The computer-readable medium of claim 124 wherein the computer-readable medium is a memory of the computing device.



126. (Original) The computer-readable medium of claim 124 wherein the computer-readable medium is a data transmission medium transmitting a generated data signal containing the contents.

127. (Original) A computing device for providing information about a current state that is represented with multiple attributes, comprising:

an analysis component that is capable of analyzing received information related to at least one of the multiple attributes in order to determine at least one type of occurrence that may be of interest to at least one module;

a detection component that is capable of, after the determining of the type of occurrence, detecting an occurrence of the determined type; and

a notifier component that is capable of notifying the modules of the detected occurrence.

128. (Original) The computing device of claim 127 wherein the analysis component, the detection component and the notifier component are part of an intermediary module executing in memory of the computing device.

129. (Original) The computing device of claim 127 further comprising multiple sources and multiple clients executing in memory of the computing device.

130. (Original) A computing device for providing information about a current state that is represented with multiple attributes, comprising:

means for automatically analyzing received information related to at least one of the multiple state attributes in order to determine at least one type of occurrence that may be of interest to at least one module;

means for after the determining of the type of occurrence, detecting an occurrence of the determined type; and

means for notifying the modules of the detected occurrence.

131. (Original) A method in a portable computer for providing information about a context that is modeled with multiple context attributes, comprising:

for each of multiple modules,

without receiving instructions to do so from that module, analyzing received information from that module in order to determine at least one type of event whose occurrences are likely to be of interest to the module;

monitoring occurrences of events in order to detect an occurrence of the determined type of event; and

in response to the detecting of the occurrence, notifying that module of the detected occurrence.

132. (Original) The method of claim 131 wherein the context attributes represent information about a user of the portable computer.

133. (Original) The method of claim 131 wherein the context that is represented is a current context.

134. (Original) The method of claim 131 wherein at least one of the determined types of events is availability of a source for supplying values of a specified context attribute.

135. (Original) The method of claim 131 wherein at least one of the determined types of events is availability of a specified source for supplying values of at least one context attribute.

136. (Original) The method of claim 131 wherein receiving of the notifications by the modules prompts the modules to present information to users.

137. (Original) A computer-readable medium containing instructions that when executed cause a computing device to provide information about a context that is modeled with multiple context attributes, by performing a method comprising:

for each of multiple modules,

without receiving instructions to do so from that module, analyzing received information from that module in order to determine at least one type of event whose occurrences are likely to be of interest to the module;

monitoring occurrences of events in order to detect an occurrence of the determined type of event; and

in response to the detecting of the occurrence, notifying that module of the detected occurrence.

138. (Original) A portable computer for providing information about a context that is represented with multiple attributes, comprising:

a first component that is capable of, for each of multiple modules, automatically analyzing received information from that module in order to determine at least one type of event whose occurrences are likely to be of interest to the module and monitoring occurrences of events in order to detect an occurrence of the determined type of event; and

a second component that is capable of, in response to the detecting of an occurrence of a type of event determined to likely be of interest to a module, notifying that module of the detected occurrence.

139. (Previously Presented) The method of claim 82 wherein the wearable computer is a portable computer.

140. (Previously Presented) The method of claim 82 wherein the wearable computer is a body-supported computer.

141. (Previously Presented) The method of claim 82 wherein the wearable computer is a thin client device.

142. (Previously Presented) The method of claim 82 wherein the user is another computing device.

143. (Previously Presented) The method of claim 82 wherein the user is interacting with one or more of the state client modules.

144. (Previously Presented) The method of claim 82 wherein the user is not a person.

145. (Previously Presented) The method of claim 82 wherein one or more of the state client modules, one or more of the state server modules and/or the intermediary module are executed by the wearable computer on one or more remote computing devices.

146. (Previously Presented) The method of claim 82 wherein a portion of one or more of the state client modules, of one or more of the state server modules and/or of the intermediary module is executed by the wearable computer on one or more remote computing devices.

147. (Previously Presented) The method of claim 82 wherein the sending by the state server modules of the state attribute values is performed in response to one or more requests by the intermediary module for those values.

148. (Previously Presented) The method of claim 82 wherein the sending by the state server modules of the state attribute values is performed without requests by the intermediary module for those values.

149. (Previously Presented) A computer-readable medium whose contents cause a computing device to provide information about a current state modeled with multiple state attributes, the providing of the information based on a plurality of executing state server modules that supply values for the state attributes, on a plurality of executing state client modules that receive and process values for the state attributes, and on an executing intermediary module that facilitates exchange of state attribute values, by performing a method comprising:

for each of the executing state server modules, sending values for at least one of the state attributes;

for each of multiple of the executing state client modules, sending one or more requests for values for at least one of the state attributes; and

under control of the intermediary module,

receiving the sent state attribute values and the sent state attribute value requests, and sending at least some of the received state attribute values to at least some of the state client modules based at least in part on the received state attribute value requests;

analyzing the received state attribute value requests in order to automatically determine related events whose occurrences may be of interest to at least some of the state client modules; and

when monitoring for occurrences of the determined events detects an occurrence of one of the determined events, notifying at least one of the state client modules of the detected occurrence.

150. (Previously Presented) A portable computing device for providing information about a state of a user, the state modeled with multiple state attributes, the providing of the information based on a plurality of executing state server modules to supply values for the state attributes, on a plurality of executing state client modules to receive and process values for the state attributes, and on an executing intermediary module to facilitate exchange of state attribute values, comprising:

a first module configured to, for each of multiple of the executing state client modules, receive a value request from the state client module for each of one or more of the state attributes;

a second module configured to, for each of the executing state server modules, receive values sent from the state server module for at least one of the state attributes, and configured to send at least some of the received state attribute values to at least some of the state client modules based at least in part on the received state attribute value requests; and

an intermediary module configured to,

analyze the received state attribute value requests in order to automatically determine events whose occurrences may be of interest to at least some of the state client modules; and

when monitoring for occurrences of the determined events detects an occurrence of one of the determined events, notifying at least one of the state client modules of the detected occurrence.

151. (Previously Presented) A method in a computing system for providing information about a current state that is modeled with multiple state attributes, the method comprising:

receiving information from one or more modules that includes one or more values of at least one state attribute and additional information for the one or more values that describes those values;

automatically analyzing the received information in order to determine at least one type of occurrence that may be of interest to at least one determined module, the determining based at least in part on the additional information;

after the determining of the type of occurrence, detecting an occurrence of the determined type; and

notifying the determined modules of the detected occurrence.

152. (Previously Presented) The method of claim 151 wherein the detecting of the occurrence of the determined type is based at least in part on the received information.

153. (Previously Presented) The method of claim 151 wherein the detecting of the occurrence of the determined type is based at least in part on additional information received for one or more values of state attributes.

154. (Previously Presented) The method of claim 151 wherein the additional information for each of the one or more values is metadata for the value.

155. (Previously Presented) A method in a computing system for providing information about a current state that is modeled with multiple state attributes, the method comprising:

receiving information from one or more modules that includes one or more values of at least one state attribute and additional information for the one or more values that describes those values, the additional information for each of the one or more values including uncertainty information for the value;

automatically analyzing the received information in order to determine at least one type of occurrence that may be of interest to at least one determined module, the determining based at least in part on the additional information;

after the determining of the type of occurrence, detecting an occurrence of the determined type; and

notifying the determined modules of the detected occurrence.

156. (Previously Presented) The method of claim 151 wherein the additional information for each of the one or more values includes information related to one or more times at which the value is accurate.

157. (Previously Presented) A method in a computing system for providing information about a current state that is modeled with multiple state attributes, the method comprising:

receiving information from one or more modules that includes one or more values of at least one state attribute;

automatically analyzing the received information in order to determine at least one type of occurrence that may be of interest to at least one determined module, the type of occurrence related to values of one or more of the at least one state attributes;

after the determining of the type of occurrence, detecting an occurrence of the determined type based at least in part on a mediated value for one of the at least one state attributes, the mediated value generated by mediating multiple values for that one state attribute; and

notifying the determined modules of the detected occurrence.

158. (Previously Presented) A method in a computing system for providing information about a current state that is modeled with multiple state attributes, the method comprising:

receiving information from one or more modules that includes one or more values of at least one state attribute;

generating one or more modeled values for one or more other state attributes at a higher level of abstraction than the at least one state attributes, the generated modeled values based at least in part on the received values of the at least one state attributes;

automatically analyzing the generated modeled values of the other state attributes in order to determine at least one type of occurrence that may be of interest to at least one determined module;

after the determining of the type of occurrence, detecting an occurrence of the determined type; and

notifying the determined modules of the detected occurrence.

159. (Previously Presented) The method of claim 158 wherein the detecting of the occurrence of the determined type is based at least in part on the generated modeled values of the other state attributes.

160. (Previously Presented) The method of claim 158 wherein the detecting of the occurrence of the determined type is based at least in part on generated modeled values of state attributes.



161. (Previously Presented) The method of claim 158 wherein the other state attributes at the higher level of abstraction model a physical activity of a user of the computing system.

162. (Previously Presented) The method of claim 158 wherein the other state attributes at the higher level of abstraction model an emotional state of a user of the computing system.

163. (Previously Presented) The method of claim 158 wherein the other state attributes at the higher level of abstraction model a cognitive load of a user of the computing system.

164. (New) The method of claim 155 wherein the detecting of the occurrence includes monitoring received information.

165. (New) The method of claim 155 wherein the detecting of the occurrence includes detecting changes in the modeling of the current state.

166. (New) The method of claim 155 wherein the determined type of occurrence is satisfaction of a condition related to a value of at least one of the state attributes, and wherein the detecting of the occurrence includes analyzing changes in the values of the at least one state attributes in order to determine when the condition is satisfied.

167. (New) The method of claim 155 wherein at least one of the determined modules is a source of values for at least one of the state attributes.

168. (New) The method of claim 155 wherein the at least one of the determined modules is a consumer of values for at least one of the state attributes.

169. (New) The method of claim 155 wherein the determined type of occurrence is a change in a value of a selected state attribute.

170. (New) The method of claim 155 wherein the determined type of occurrence includes a source becoming available to supply values for a selected state attribute.

171. (New) The method of claim 155 wherein the determined type of occurrence includes availability of a value of a selected state attribute that satisfies determined criteria.

172. (New) The method of claim 155 wherein the determined type of occurrence includes a selected source becoming available to supply state attribute values, and wherein the detecting includes determining that the selected source is currently able to supply state attribute values.

173. (New) The method of claim 155 wherein the determined type of occurrence includes a selected client becoming available to receive state attribute values.

174. (New) The method of claim 155 wherein the determined type of occurrence includes at least one client expressing an interest in receiving values of a selected state attribute.

175. (New) The method of claim 155 wherein the computing system has access to various devices, and wherein the determined type of occurrence includes a value of one of the state attributes indicating that access to a determined device has become available.

176. (New) The method of claim 155 wherein the determined type of occurrence includes access to a selected group of themed attributes becoming available.

177. (New) The method of claim 155 wherein the providing of the information about the current state is performed by a characterization module, and wherein the determined type of occurrence includes a value of one of the state attributes indicating that access to selected other functionality provided by the characterization module has become available.

178. (New) The method of claim 177 wherein the other functionality is a selected mediator.

179. (New) The method of claim 155 wherein the determining of the type of occurrence includes determining a number of times that the notifying of the determined modules is to occur.

180. (New) The method of claim 155 wherein the determining of the type of occurrence includes determining times during which the notifying of the determined modules is to occur.

181. (New) The method of claim 155 wherein the state attributes represent information about a user of the computing system.

182. (New) The method of claim 181 wherein the represented information reflects a modeled mental state of the user.

183. (New) The method of claim 155 wherein the state attributes represent information about the computing system.

184. (New) The method of claim 155 wherein the state attributes represent information about a physical environment.

185. (New) The method of claim 155 wherein the state attributes represent information about a cyber-environment of a user of the computing system.

186. (New) The method of claim 155 wherein the state attributes represent current predictions about a future state.

187. (New) The method of claim 155 wherein the notifying of a module of a detected occurrence prompts the module to present information to a user of the module.

188. (New) The method of claim 155 wherein the notifying of a module of a detected occurrence includes supplying information about the detected occurrence.

189. (New) The method of claim 155 wherein the determining of the type of occurrence includes determining an event whose occurrences are occurrences of the determined type.

190. (New) The method of claim 155 wherein the detecting of the occurrence of the determined type is based at least in part on the received information.

191. (New) The method of claim 155 wherein the determining is further based at least in part on uncertainty information included in the additional information.

192. (New) The method of claim 155 wherein the additional information for each of the one or more values is metadata for the value.

193. (New) The method of claim 155 wherein the additional information for each of the one or more values further includes information related to one or more times at which the value is accurate.

194. (New) A computer-readable medium whose contents cause a computing device to provide information about a state that is represented with multiple state attributes, by performing a method comprising:

receiving information that includes one or more values of at least one state attribute and additional information for at least one of the one or more values that describes those at least one values, the additional information for each of the at least one values including uncertainty information for the value;

automatically analyzing the received information in order to determine at least one type of occurrence that may be of interest to at least one determined client, the determining based at least in part on the additional information;

after the determining of the type of occurrence, detecting an occurrence of the determined type; and

performing one or more additional actions based on the detected occurrence.

195. (New) The computer-readable medium of claim 194 wherein the performing of the one or more additional actions based on the detected occurrence includes notifying at least one determined client of the detected occurrence, wherein the determining is further based at least in part on uncertainty information included in the additional information, and wherein the received information is from one or more external modules to represent a current state.

196. (New) The computer-readable medium of claim 194 wherein the computer-readable medium is a memory of the computing device.

197. (New) The computer-readable medium of claim 194 wherein the computer-readable medium is a data transmission medium transmitting a generated data signal containing the contents.

198. (New) A computing device for providing information about a current state that is represented with multiple attributes, comprising:

one or more processors;

an analysis component configured to, when executed by at least one of the processors, automatically analyze received information in order to determine at least one type of occurrence that may be of interest, the received information including one or more values of at least one attribute and additional information for at least one of the one or more values that describes those at least one values, the additional information for each of the at least one values including uncertainty information for the value, the determining being based at least in part on the additional information;

a detection component configured to, when executed by at least one of the processors, after the determining of the type of occurrence, detect an occurrence of the determined type; and

a notifier component configured to, when executed by at least one of the processors, provide a notification of the detected occurrence.

199. (New) The computing device of claim 198 wherein the providing of the notification of the detected occurrence includes notifying at least one client of the detected occurrence, wherein the determining is further based at least in part on uncertainty information included in the additional information, and wherein the received information is from one or more external modules.

200. (New) The computing device of claim 198 wherein the analysis component, the detection component and the notifier component are part of an intermediary module executing in memory of the computing device.

201. (New) The computing device of claim 198 wherein the analysis component, the detection component and the notifier component each include software instructions for execution in memory of the computing device.

202. (New) The computing device of claim 198 further comprising multiple sources and multiple clients executing in memory of the computing device.